

# ENDANGERED SPECIES

## Technical Bulletin

Department of the Interior, U.S. Fish and Wildlife Service, Washington, D.C. 20204

### Listing Action Completed for Spotted Owl and Five Other Species

During June 1990, the U.S. Fish and Wildlife Service completed actions to list four animals and two plants as Threatened or Endangered species. The protection authorized by the Endangered Species Act is now available to the following taxa:

#### Northern Spotted Owl (*Strix occidentalis caurina*)

On June 22, the Service announced the decision to list the northern spotted owl as Threatened throughout its range. One of three spotted owl (*Strix occidentalis*) subspecies, this bird is found from southwestern British Columbia, Canada, through western Washington, western Oregon, and the Coast Range area of northwestern California south to San Francisco Bay. Approximately 2,000 breeding pairs have been located, although the total population is believed to number 3,000 to 5,000 pairs.

In making its listing decision, the Service found that the northern spotted owl is threatened by the degradation or loss of its habitat and the resulting decline in owl populations. Northern spotted owls occur primarily in old growth and mature forest habitats, but may also be found in younger forests that have the appropriate characteristics, such as: high canopy closure, large overstory trees, sufficient open space under the forest canopy for owls to fly, large accumulations of fallen trees and other woody debris on the ground, and numerous large snags or trees that have large cavities, broken tops, or other deformities. These characteristics provide nesting and perching sites for the owls, and support the animals upon which they feed. Most remaining northern spotted owl habitat is on public land managed by the U.S. Forest Service, Bureau of Land Management, and National Park Service.

Radio telemetry studies indicate that northern spotted owls have relatively large home ranges. The extent varies with

ecological conditions; for example, the median size of a pair's home range is about 3,000 acres in the Oregon Cascades but almost 10,000 acres on Washington's Olympic Peninsula. Although there are no reliable estimates of the subspecies' historical population size and distribution, spotted owls are believed to have inhabited most older forests throughout the Pacific Northwest prior to modern settlement. However, most of these older forests no longer exist. Timber harvest is the primary factor responsible for the loss of habitat, but such natural events as fire, volcanic eruption, and wind storms have contributed to the decline. Details on the status of the northern spotted owl and the threats it faces are available in the June 26, 1990, final listing rule; for a copy, write the U.S. Fish and Wildlife Service, Portland Regional Office, Eastside Federal Complex, 911 N.E. 11th Avenue, Portland, Oregon, 97232-4181, or call 503/231-6730.

In January 1987, the Service was petitioned by Greenworld to list the northern spotted owl as Endangered. Another listing petition was received in August of that year from the Sierra Club Legal Defense Fund, Inc., on behalf of 29 conservation organizations. The Service's initial finding that listing was not warranted at the time was challenged in court, and the court ruled against the Service. As a result, the Service reconsidered its decision. After additional information was received, a supplemental status review was completed, resulting in the Service's June 23, 1989, proposal to list the northern spotted owl as Threatened.

Due to controversy surrounding the management of old-growth forests in the Northwest, the Service conducted another status review that was unprecedented in scope and depth to ensure that the final decision on listing would be scientifically well-founded. According to the special Listing Review Team that was established to address the northern spotted owl issue, "Never before has so much been known



photo by Randy Wilk

(continued on page 4)



## Regional News

### Regional endangered species staffers have reported the following news:

**Region 1** — Seven adult California least terns (*Sterna antillarum browni*) have been found dead and another was

found moribund in colonies on the U.S. Marine Corps Base at Camp Pendleton. These terns are among at least 40 adult and young least terns that were found dead in southern California breeding colonies in 1989 and 1990. The apparent

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magnitude of the problem has prompted a concerted effort to determine the cause or causes of death. The birds have been sent to the Fish and Wildlife Service's National Wildlife Health Research Center in Madison, Wisconsin, for necropsy.

**Region 2** — In July of 1989, a forest fire in the headwaters of Main Diamond Creek in the Gila National Forest prompted the Fish and Wildlife Service to remove 566 Endangered Gila trout (*Oncorhynchus gilae*) from the stream and place them in the Mescalero National Fish Hatchery near Alamogordo, New Mexico. Last May, the stream was surveyed to determine if any fish that were left behind had survived the aftermath of the fire, which included deposition of large amounts of ash, silt, and debris in the stream channel. No fish were found; however, the team will continue to monitor the condition of the stream. When it is determined that the stream has recovered from the effects of the fire, it will be restocked with either offspring of the fish that were removed or the original adults.

The Gila Trout/Chihuahua Chub Recovery Team transplanted 40 Gila trout from Iron Creek to Sacaton Creek, about 10 miles (16 kilometers) to the southwest. The June transplant was done in an attempt to duplicate the Iron Creek population. If the fish survive in Sacaton Creek, 60 more will be transplanted next year. Prior to the transplant, Sacaton Creek was without fish.

During March, the recovery team conducted an inventory of Chihuahua chub (*Gila nigrescens*) populations and habitat in the State of Chihuahua, Mexico. Although its status there is not as critical as it is in the United States, this fish is at risk in Mexico. Chihuahua chubs were captured at 30 of 55 locations the team sampled. A total of 10,149 fish were captured, identified, and released. Large chubs were weighed and measured. The inventory, which covered 28 days in the backcountry, would have not been possible without the assistance of Pablo Dominguez Gonzales, biologist for the Mexican Government's Secretariat of Urban Development and Ecology, Chihuahua, Mexico.

Canadian and U.S. biologists picked up 12 eggs from 20 whooping crane (*Grus americana*) nests in Wood Buffalo National Park, Canada, on May 30. Eleven eggs were fertile and all hatched after delivery to the International Crane Foundation in Baraboo, Wisconsin. A total of 30 nests had been found in Canada prior to the egg pickup. An estimated six more eggs could have been picked up in the wild and transferred to the Patuxent Wildlife Research Center captive flock in Laurel, Maryland, but this action did not occur

(continued on page 3)



# Endangered Species and Habitat Conservation Staff in Washington is Reorganized

In order to give greater emphasis to two of the Fish and Wildlife Service's highest conservation priorities, endangered species and wetlands, separate divisions have been created for both programs. Formerly, these offices were combined as the Division of Endangered Species and Habitat Conservation. The reorganization applies only to the Washington, D.C., office, which provides staff support to the Director. Regional and field operations are not significantly affected.

## Division of Endangered Species

The Chief of the new Division of Endangered Species (DES) is Dr. Larry R. Shannon, who joined the Service from the Minnesota Department of Natural Resources, where he served as director of the Division of Fish and Wildlife. Among the responsibilities of the DES are developing policy and guidelines for Federal listing actions, recovery planning, Habitat Conservation Plans, grants to the States, and economic analyses of Critical Habitat;

tracking of listing actions, petitions, and recovery plans during their review in Washington; compiling regional selections of listing candidates; coordinating the development of briefing material; and serving as a liaison to other agencies and organizations. The development of proposed and final listing rules, identification of listing candidates, evaluation of listing petitions, and preparation and implementation of recovery plans will remain the responsibilities of the appropriate regional and field offices. Listings of foreign species will continue to be developed in the Service's Office of Scientific Authority.

## Division of Habitat Conservation

Mr. William E. Knapp serves as Chief of the new Division of Habitat Conservation (DHC). This division has a wide range of responsibilities, including (but not limited to) wetlands conservation. The DHC provides Washington Office support for the regional and field offices to fulfill the Service's responsibilities under the Food

Security Act ("Farm Bill"), Emergency Wetlands Act, Fish and Wildlife Coordination Act, National Environmental Policy Act, Clean Water Act, and other laws that give the Service specific authority and mandates to coordinate with other Federal agencies. It works with such Federal agencies as the Army Corps of Engineers, Bureau of Reclamation, Soil Conservation Service, Federal Energy Regulatory Commission, and the Minerals Management Service to help them avoid or mitigate losses of wildlife habitat resulting from their activities. Because of these interagency responsibilities, DHC retains authority for developing guidance on implementing Section 7 of the Endangered Species Act. (However, most Section 7 consultations and Biological Opinions, permit evaluations, and reviews of environmental impact statements take place in the Service's regional and field offices.) Among the other important DHC responsibilities is conducting the National Wetlands Inventory.

## Regional News

(continued from page 2)

because of insufficient pen space to house the cranes. Overcrowding of the birds could create a health hazard for all of the resident cranes. Consequently, fewer eggs were transferred this year. The chicks transferred to the International Crane Foundation have filled all of its pen space.

Aerial surveys in June indicated 22 to 27 live chicks in Wood Buffalo National Park, including 2 sets of twins. The flights also located two additional nests in Alberta, Canada. This represents a nesting expansion into an area containing large amounts of unoccupied and apparently suitable habitat. Over the entire nesting area, however, habitat quality has declined this year because water levels are dropping.

**Region 4** — In recent years, the Fish and Wildlife Service, National Park Service, Tennessee Wildlife Resources Agency, and North Carolina Wildlife Resources Commission have been involved in a project to reintroduce three federally listed fishes into Abrams Creek in Blount County, Tennessee. These three fish species are the Endangered smoky madtom (*Noturus baileyi*), the Threatened yellowfin madtom (*Noturus*

*flavipinnis*), and the Threatened spotfin chub (*Cyprinella monacha*). Last spring, biologists under contract to the Tennessee Wildlife Resources Agency found a male smoky madtom guarding a nest site in Abrams Creek. Although no reproduction has been observed as yet, this is the first sighting of any of the released fish. More searches are under way, and the reintroduction effort continues.

In February, the Kentucky Department of Fish and Wildlife Resources hosted a meeting in Frankfort, Kentucky, on Indiana bat (*Myotis sodalis*) summer habitat. Representatives from Fish and Wildlife Service Regions 2, 3, 4, and 5 and from many of the States within the species' range attended the meeting. Recent information, gathered primarily by researchers in Illinois and Missouri, indicates that the Indiana bat's summer habitat requirements are more complex than previously thought. The current guidelines for habitat evaluation are thus inadequate and do not address many of the habitat types that the species is now known to use. The Indiana/Gray Bat Recovery Team agreed to develop new habitat evaluation guidelines by fall of 1990. These new guidelines may help the Fish and Wildlife Service provide better protection to the Indiana bat during the summer, and may also help reverse the species' population decline.

In June, field work was initiated on the summer habitat requirements of Kentucky's population of the Endangered Virginia big-eared bat (*Plecotus townsendii virginianus*). This 2-year study will examine the caves, rock shelters, and other sites used by maternity and bachelor colonies during the summer. Foraging habitat preferences will be determined through the use of radio-tracking techniques. Funds for the project are being provided by the Fish and Wildlife Service under Section 6 of the Endangered Species Act, by the U.S. Forest Service, and by the University of Kentucky.

The Service's Jackson, Mississippi, Field Office has received status reports from the Tennessee Heritage Program on four plant species that are Category 2 candidates for listing: the Tennessee milkvetch (*Astragalus tennesseensis*), Guthrie's ground plum (*Astragalus bibullatus*), glade-cress (*Leavenworthia exigua* var. *lutea*), and *Leavenworthia exigua* var. *exigua*. With the exception of Guthrie's ground plum, most populations of these species are found in Tennessee, with disjunct populations in adjoining States. (Guthrie's ground plum is found only in Tennessee.) The four species are endemic to cedar glade systems, which are often destroyed or modified by urban development and agricultural activities.

(continued on page 7)



# Listing Proposals — June 1990

A subspecies of black bear and three species of plants were proposed by the Fish and Wildlife Service during June 1990 for listing as Threatened or Endangered. If the proposals are approved, the following taxa will be eligible for Endangered Species Act protection:

## Louisiana Black Bear (*Ursus americanus luteolus*)

The American black bear (*Ursus americanus*) once was widespread in North America, from Alaska south to central Mexico, but its range has been fragmented and its numbers reduced by habitat loss and shooting. One generally recognized subspecies, the Louisiana black bear (*U. a. luteolus*), historically occurred in bottomland forests from eastern Texas through all of Louisiana to southern Mississippi. It is distinguished from other subspecies by a skull that is relatively long, narrow, and flat.

The Louisiana black bear has a unique place in American culture, providing the inspiration for the first "Teddy Bear" in the early 1900's. It is said that President Theodore Roosevelt, while on a hunting trip in Mississippi, refused to shoot a Louisiana black bear that had been captured and bound for him. This incident received national attention when it was used in a satirical newspaper cartoon, prompting an enterprising merchant to begin marketing stuffed toy bears with Roosevelt's nickname. The subspecies gained prominence of another sort in "The Bear," William Faulkner's famous short story about an adolescent boy coming of age during a hunt in the Mississippi backwoods.

By 1980, more than 80 percent of the Louisiana black bear's bottomland forest habitat in the lower Mississippi River Valley had disappeared, with another 165,000 acres being cleared every year. Much of the habitat that remains is reduced in quality. Currently, bear populations are concentrated in two core areas, the Tensas and Atchafalaya River basins in Louisiana. Small numbers also still occur in adjacent parts of Mississippi.

On June 21, the Service proposed to list the Louisiana black bear as Threatened. If the listing is approved, Federal agencies such as the U.S. Army Corps of Engineers and the Soil Conservation Service will be required to ensure that none of their activities are likely to jeopardize the subspecies' survival. The proposal contains a special rule that also would list black bears of any other subspecies that may now occur within the Louisiana black bear's historical range as Threatened under the "Similarity of Appearance" provision of the Endangered Species Act. This measure is intended to

facilitate law enforcement, in effect giving the benefit of the doubt to all black bears in the area in order to protect those of the vulnerable subspecies *U. a. luteolus*. Black bears of another subspecies, *U. a. americanus*, were introduced from Minnesota in the mid-1960's for hunting purposes, and there is a possibility that a few remain.

## Santa Rosa Plants

Three species of plants that occur primarily in the Santa Rosa Plains area of the Cotati Valley in Sonoma County, California, have been proposed for listing as Endangered (F.R. 6/6/90). All three are annuals and are adapted to growing in seasonal wetlands, including vernal pools. Due to habitat alteration, along with other factors, these species are believed to be in danger of extinction:

• **Baker's sticky seed (*Blennosperma bakeri*)** — An herb in the aster family (Asteraceae), this plant bears yellow, daisy-like flowers from March through April and grows to a height of about 12 inches (30 centimeters). This species is known from 30 sites in the Cotati Valley and 4 in the adjacent Sonoma Valley.

• **Burke's goldfields (*Lasthenia burkei*)** — Another member of the aster family, *L. burkei* is a small, branched herb that produces bright yellow flowers from April through June. It is known from 33 locations in the Cotati Valley, and has been reported from Mendocino and Lake Counties.

• **Sebastopol meadowfoam (*Limnanthes vinculans*)** — A small, multi-stemmed herb in the false mermaid family (Limnathaceae), this plant grows to a height of only 2 to 12 inches (5 to 30 cm). Its white flowers are borne singly at the ends of the stems. *Limnanthes vinculans* has never been recorded outside of the Cotati Valley, where it is known from 19 sites.

All three species are restricted to vernal pools and interconnecting swales. These shallow depressions fill with water during fall and winter rains, and downward percolation is blocked by an impervious subsurface layer. The temporary inundations make the basins too wet for nearby upland plants, while the seasonal drying makes them unsuitable for species that require a permanent source of water. Vernal pool plants, however, have adapted to this type of habitat; they germinate when the ground is inundated and flower as the pool dries.

These seasonal wetlands are particularly vulnerable to modification or destruction by human-related activities. About 40 percent of the Santa Rosa area already has been urbanized, and another 50 percent has been developed for agri-

culture. Proximity to San Francisco and the relative affordability of housing in the Santa Rosa area are expected to increase the rate of habitat loss. The Service estimates that development could reduce the remaining ranges of the recently proposed species by 50 to 70 percent. Additionally, indirect impacts on the vernal pools could result from projects that alter the natural hydrology of these areas and promote the invasion of competing vegetation. A proposed sewage treatment plant could flood some habitat with treated wastewater and favor flood-tolerant grasses.

Under Section 404 of the Clean Water Act, the Army Corps of Engineers is responsible for regulating the discharge of fill material into wetlands, including vernal pools. Permits for activities that would result in the filling of wetlands are available from the Corps under certain circumstances. If the Santa Rosa plants are listed, the Corps will be required by the Endangered Species Act to ensure that any activity it grants a permit for is not likely to jeopardize the plants' survival.

## Final Listing Rules

(continued from page 1)

about a species considered for threatened or endangered status." (Copies of this status review, which provides the biological basis for the listing decision, are available from the Service's Portland Regional Office.) In addition to the scientific reviews, four major public hearings were held and the public comment period was extended to more than 6 months. The Service received more than 23,000 comments on the listing proposal; a summary of these comments and the Service's responses are included in the final listing rule.

In 1989, while the listing proposal was still under consideration, an Interagency Scientific Committee was established to address the conservation of the northern spotted owl. The committee consisted of scientists from the Fish and Wildlife Service, Forest Service, and Bureau of Land Management, with representatives of the involved States, the timber industry, and conservation organizations serving as advisors. On April 2, 1990, the committee issued its report, "A Conservation Strategy for the Northern Spotted Owl." The 458-page scientific document is popularly known as the "Jack Ward Thomas Report" after the committee's chairman (a Forest Service research biologist).

The report stated that current management strategies are inadequate to ensure the viability of the northern spotted owl. In

(continued on next page)

## Final Listing Rules

(continued from previous page)

reponse, the committee proposed a new conservation strategy centered around the establishment of a network of "habitat conservation areas" throughout the owl's range. Wherever possible, each of these areas would be large enough to support a minimum of 20 owl pairs, and the areas would be located within 12 miles of each other.

The conservation strategy was based on five widely accepted concepts of reserve design: 1) species that are well-distributed across their ranges are less vulnerable to extinction than species confined to small portions of their ranges; 2) large blocks of habitat containing multiple pairs of a species are better than small ones containing one to a few pairs; 3) blocks of habitat close together are better than blocks far apart; 4) contiguous habitat is better than fragmented habitat; and 5) animals are better able to disperse among blocks of habitat when connecting areas have suitable habitat characteristics.

The strategy detailed in the report would not protect all of the northern spotted owl's remaining habitat, but it is designed to conserve enough to give the owl a high probability of survival for the next 100 years. The Fish and Wildlife Service believes that the committee's strategy is the most scientifically credible plan yet advanced for managing the owl, and it will receive close consideration as the Service develops a recovery plan for the subspecies. Copies of the Interagency Scientific Committee's report are available by writing the Bureau of Land Management (OR 912), P.O. Box 2965, Portland, Oregon 97208; or calling 503/280-7027 (FTS 392-7027).

Because of concern that implementing the Interagency Scientific Committee's strategy would significantly reduce the logging of old-growth forests in the Northwest, thereby adding to unemployment in the region's timber industry, Secretary of Agriculture Clayton Yeutter and Secretary of the Interior Manuel Lujan have put forward an alternative approach to owl management. Their plan, announced on June 26, incorporates five major points:

(1) The Bureau of Land Management (BLM) will develop its own management strategy aimed at conserving the owl on its lands while resulting in higher timber harvest levels. BLM will investigate whether such measures as supplemental feeding, setting out nesting boxes, and propagating owls for release can effectively mitigate loss of owl habitat.

(2) Forest Service and BLM timber sales will follow the provisions of Section 318 of the 1990 Interior and Related Agencies Appropriation Act. Both agencies have been directed to minimize delay of timber sales and to achieve the congressionally mandated timber level for fis-

## Spotted Owls by Subspecies

-  Northern Spotted Owl
-  California Spotted Owl
-  Mexican Spotted Owl

Based on FWS Status Review 4/89  
(Estimated Habitat Capability) and FSEIS 7/88.



cal year 1990 while providing for the conservation of the northern spotted owl and significant tracts of old-growth forest.

(3) The Administration has established a new high-level interagency task force, chaired by the Secretary of Agriculture, to begin work immediately on devising a forest management plan for the Forest Service in fiscal year 1991. The task force report is scheduled to be submitted to President Bush by September 1.

(4) The Administration will seek to convene the Endangered Species Committee, under Section 7 of the Endangered Species Act, if a Federal agency receives a Biological Opinion from the Fish and Wildlife Service that a proposed timber sale or harvest plan would be likely to jeopardize the northern spotted owl. Section 7 of the Act requires Federal agencies to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the survival of listed species. The Endangered Species Committee, however, is authorized, under certain limited circumstances, to exempt a Federal activity from the provisions of the Act. The Administration also will seek legislation to expand the mandate of the Committee to allow it to develop a long-range forest management plan for federally-managed forests.

(5) The Administration announced support for provisions of the pending Customs and Trade Act of 1990 that would ban the export of raw logs taken from State lands. According to Forest Service estimates, enactment of these provisions would protect 6,000 jobs in the Pacific Northwest by the year 2000.

The activities of the high-level task force established under this approach

have been initiated, and a report of its findings is due by September 1, 1990. In addition, the Forest Service and Bureau of Land Management are to report to Congress by September 30, 1990 (under Section 318 of the Fiscal Year 1990 Appropriations Act) on their intentions for the management of the northern spotted owl. There have also been a number of bills introduced into Congress regarding timber/wildlife issues in the Northwest. These pieces of proposed legislation range in their emphasis from the protection of owls to the protection of jobs and timber supplies. Some congressional hearings have been held, and further action is expected this fall.

Whichever strategies are adopted, the Fish and Wildlife Service's goal is to conserve and recover the northern spotted owl while minimizing impacts on the activities of other agencies and local communities. In announcing the listing decision, John Turner, Director of the Fish and Wildlife Service, said: "I believe there is room in the world for both owls and loggers, if all those affected by this decision will work together to find creative solutions."

Because of the high visibility of this issue and the degree of public uncertainty over the effects of the Endangered Species Act, the Service has published a procedural manual that describes its legal responsibilities for the owl. This document, "Procedures Leading to Endangered Species Act Compliance for the Northern Spotted Owl," describes the steps that Federal, non-Federal, and private entities must follow to comply with

(continued on page 6)



## Final Listing Rules

(continued from page 5)

the Act. The Service has expedited Section 7 interagency consultations, habitat conservation planning, and recovery planning under these guidelines. For a copy of the procedural manual, or for further information on the Service's activities relating to the northern spotted owl, write the Portland Regional Office or call 503/231-6730.

Meanwhile, the Service is reviewing the status of the Mexican spotted owl (*Strix occidentalis lucida*), a second subspecies, which was petitioned for listing in December 1989. The Service will make a decision by December 1990 on whether or not listing the Mexican spotted owl as Threatened or Endangered is warranted. (See notice in the March 28, 1990, *Federal Register*.) This subspecies occurs in scattered mountain forests within Mexico and the southwestern United States. In the U.S., it is now found predominantly in old-growth forests or in remote wooded canyons of mountain drainage systems. All three subspecies, including the California spotted owl (*Strix occidentalis occidentalis*), also were included in the Service's January 6, 1989, Animal Notice of Review as Category 2 potential listing candidates.

### Lower Keys Rabbit (*Sylvilagus palustris hefneri*)

This small, brown subspecies of marsh rabbit is known only from the lower Florida Keys, where it occurs primarily in salt and freshwater marshes. Although the rabbit may once have been common throughout the larger Keys, there are now believed to be only 200-300 remaining on 13 sites, and only 6 of these sites are protected. The lower Keys rabbit has declined primarily because of the filling of wetlands for residential, commercial, and military purposes. Continuing urbanization and predation by feral house cats are potential threats to the subspecies' survival. The Service proposed listing the lower keys rabbit as Endangered on August 30, 1989 (see BULLETIN Vol. XIV, Nos. 9-10), and the final rule was published June 21, 1990.

### Squirrel Chimney Cave Shrimp (*Palaemonetes cummingsi*)

This small (1.2 inches or 30 millimeters), freshwater crustacean occurs at only one site, a sinkhole named Squirrel Chimney near Gainesville, Florida. The site is privately owned and is threatened by potential residential development. Any detrimental change to the sinkhole or the underlying aquifer could adversely affect the species. The use of septic tanks,

pesticides, and herbicides associated with residential development have the potential to degrade the aquifer's water quality. Certain forestry practices in the area also could damage the sinkhole through erosion or the use of pesticides. On August 30, 1989, the Service proposed that the Squirrel Chimney cave shrimp be listed as an Endangered species; the final listing rule was published June 21, 1990.

### Fanshell Mussel (*Cyprogenia stegaria* (= *C. irrorata*))

The fanshell is a medium to large freshwater mussel that once was widely distributed in the Ohio, Wabash, Cumberland, and Tennessee Rivers and their larger tributaries in Pennsylvania, Ohio, West Virginia, Illinois, Indiana, Kentucky, Tennessee, Alabama, and Virginia. Most of these historical populations evidently were lost when construction of impoundments and navigation projects, pollution, and habitat alterations (such as gravel and sand dredging) diminished the species' preferred riverine gravel/sand habitat and eliminated or reduced the mussel's fish host. As a result, the fanshell is now believed to be reproducing in only three rivers: the Green and Licking Rivers in Kentucky and the Clinch River in Tennessee and Virginia. Small, apparently non-reproducing populations also may still occur in the Muskingham River in Ohio, the Kanawha River in West Virginia, the Wabash River system in Illinois and Indiana, Tygarts Creek in Kentucky, and the Tennessee and Cumberland Rivers in Tennessee. The mussel faces potential threats from runoff from oil and gas exploration and production sites, and coal mines, toxic spills, water development projects, and collectors in the three rivers where it is still reproducing.

Due to the species' history of population losses and the vulnerability of the remaining populations, the Service proposed listing the fanshell as an Endangered species in the October 2, 1989, *Federal Register* (see BULLETIN Vol. XIV, Nos. 11-12); the final rule was published June 21, 1990.

### Michigan Monkey-flower (*Mimulus glabratus* var. *michiganensis*)

This semi-aquatic, perennial herb, a member of the snapdragon family (Scrophulariaceae), has yellow flowers and grows in clumps of up to several hundred clonal stems. Each stem is about 14 inches (36 centimeters) in length and has evenly distributed, round, coarsely-toothed leaves. The plant is restricted to five counties in the Mackinac Straits and Grand Traverse regions of northern Michigan, where it grows primarily along streams and lakeshores.

The Michigan monkey-flower no longer can be found at 3 of its 16 historically

known sites. (One of the surviving populations, located on Mackinac Island, Michigan, was just reported in June 1990.) Eight of the existing populations consist of fewer than 10 individual plants, and 2 sites contain only 1 or 2 plants. Almost two-thirds of the known populations are on private lands. The major threat to their survival is habitat loss or modification due to recreational and residential development. The Service proposed to list the Michigan monkey-flower as Endangered in the October 2, 1989, *Federal Register* (see BULLETIN Vol. XIV, Nos. 11-12), and the final rule was published June 21, 1990.

### Virginia Spiraea (*Spiraea virginiana*)

This shrub, a member of the rose family (Rosaceae), has cream-colored flowers and grows in dense clumps that are up to 10 feet (3 meters) tall. Although the Virginia spiraea is widespread geographically, it occurs in a narrowly defined habitat: along scoured banks of high gradient streams or braided features of lower stream reaches. The plant is known from 1 wet meadow and 23 stream systems in Georgia, North Carolina, Tennessee, Virginia, West Virginia, and Kentucky. (Six populations were discovered after the Service published the proposed rule to list the species as Threatened in the July 21, 1989, *Federal Register* [see BULLETIN Vol. XIV, No. 8]. Five of these populations consist of fewer than four clumps.) Historically, the species is also known to have occurred in Pennsylvania. Only three of the 24 known populations are abundant (greater than 50 clumps).

The Virginia spiraea is threatened by a combination of human and natural factors. Brush cutting along rivers and reservoir construction have eliminated or adversely affected the plant throughout its range. Proposed hydroelectric facilities potentially threaten two of the surviving populations. Large scouring floods could eliminate most of the remaining populations, and heavy competition from other native and introduced woody species is occurring at most locations. Mature seeds have been observed at only a few populations, and no seedlings have been reported. Field observations suggest that only 24 different genotypes exist, and that opportunities for colonization and establishment of new populations are very limited. Based on these threats, the Service listed the Virginia spiraea on June 15, 1990, as Threatened.



## Regional News

(continued from page 3)

After an extensive survey of cedar glade systems, the Tennessee Heritage Program concluded that Tennessee milkvetch and *Leavenworthia exigua* var. *exigua* do not appear to be threatened with extinction. Both species were located at over 100 sites, many of which support a large number of plants. In addition, several of these species' populations are found on public land and have potential for protection. In contrast, Guthrie's ground plum and *Leavenworthia exigua* var. *lutea* were located at only three sites. Additional information is being gathered to determine their eligibility for listing under the Endangered Species Act.

The Service's Southeast Region has distributed a draft environmental assessment on a proposed plan to remove a limited number of Florida panthers (*Felis concolor coryi*) from the wild and establish a captive breeding population. Currently, this critically endangered subspecies is restricted to the Big Cypress Swamp/Everglades area in south Florida. Inbreeding, coupled with a low remaining population (30 to 50 animals), has left the panther vulnerable to extinction within the next 25 to 40 years. Under the plan, the Service would establish a captive population over a 3 to 6-year period. Up to 6 kittens (new-born through 12 months of age) could be taken from the wild per year. The kittens would be selected for the greatest degree of genetic variability possible. Older animals (up to four the first year and one pair per year for following years) would be used to fill the genetic gaps. Thus, the captive breeding population would be genetically representative of the existing wild panther population.

Public meetings were held on the environmental assessment in July to provide public input on the proposed plan. A decision should be made this fall on what course of action to follow. Copies of the draft environmental assessment are available from Dennis Jordan, Florida Panther Recovery Coordinator, U.S. Fish and Wildlife Service, 117 Newins-Ziegler Hall, University of Florida, Gainesville, Florida 32611-0307 (telephone: 904/392-1861).

A 10-month-old, male, uncollared Florida panther was killed by a car June 18. The subadult was apparently travelling with its mother when it was struck while crossing a road about 6 miles (10 kilometers) north of the Big Cypress Seminole Indian Reservation in the Everglades. The accident was unusual because it occurred on a remote secondary road; most panther road kills occur on busy highways. Deaths resulting from collisions with automobiles is the greatest cause of mortality for the Florida panther. This is the thir-

teenth known panther killed by cars since July 1984.

**Region 5** — During June, Fish and Wildlife Service, National Park Service, and State biologists worked with contract beach cleaners to remove tar balls that threatened more than 100 pairs of nesting piping plovers (*Charadrius melodus*), along with their eggs and chicks, on beaches at Breezy Point, New York, and along the New Jersey coast. The tar balls, believed to have come from the B.T. Nautilus oil spill in Kill Van Kull, New York, collected in the wrackline (i.e., the area where debris from the ocean accumulates on a beach), a preferred plover feeding area. As of late June, two dead oiled plovers had been sent to the Service's National Wildlife Health Research Center for necropsy. Biologists were monitoring more than 15 partially oiled plovers and several nests that may fail to hatch because they were being incubated by adults with oil on their breast feathers.

Since 1986, the Parker River National Wildlife Refuge in Newburyport, Massachusetts, has been closing parts of its approximately 6.5-mile-long (10-km) beach to public use to protect nesting piping plovers. The closures are necessary to protect the plover chicks from disturbance until they reach flight stage and leave the area. In April of this year, about 2.25 miles (3.6 km) were closed in the southern half of the refuge. Three additional miles (5 km) of beach in the northern half of the refuge were closed to public use from June 21 through August 31. Four parking lots with beach access also were closed, reducing by about 40 percent the number of available parking spaces for refuge visitors. The refuge has placed additional signs identifying the closed areas and will increase its patrols to enforce the closures.

More than 24 piping plovers have been observed on the beach so far this year, including 9 active nests and 3 pairs exhibiting nesting behavior. Last year, eight plovers and four nests were observed at the refuge, and three nests were seen in 1988. In 1989, the Threatened piping plover population on the U.S. Atlantic Coast was estimated at about 700 pairs, with 137 pairs nesting in Massachusetts.

The Service's New York Field Office and the Army Corps of Engineers have been conducting surveys of piping plovers and least terns (*Sterna antillarum*) along the beaches adjacent to Shinnecock Inlet, on the south shore of Long Island. The surveys are part of a 3-year program, begun last year by the Service's New Jersey Field Office, to monitor construction conditions associated with an inlet dredging and beach nourishment project. This year, three piping plover nests failed in May. As of late June,

however, the plovers were incubating five nests and an egg had hatched at another nest. All but one of these nests are within a large colony of least terns. The terns' aggressive defense of the nesting area against predators should benefit the plovers.

The Pennsylvania Department of Environmental Resources has been declared eligible to enter into a cooperative agreement under Section 6 of the Endangered Species Act to conserve Threatened and Endangered plants, and thus can apply for Federal grants. Once this agreement is signed, all of the States in Region 5 will have both plant and wildlife cooperative agreements.

The Service's New England Field Office has initiated numerous recovery activities for the recently listed dwarf wedge mussel (*Alasmidonta heterodon*) in New England. To inform the public about this mussel and the threats to its existence, Service personnel have met in New Hampshire with the City of Keene's conservation commission, completed a "Dwarf Wedge Mussel Fact Sheet," and mailed information packets to all communities along the river reaches where the mussel has been found. New England Field Office biologists are investigating possible contaminant-related causes as well as possible physical disturbances to the Ashuelot River system, such as extreme water fluctuations, that may be responsible for the mussel's decline. Volunteers are also being organized to undertake additional water quality and ecological studies.

The Service's West Virginia Field Office, in cooperation with the Water Resources Division of the West Virginia Department of Natural Resources, identified a new site in the Ohio River, bordering West Virginia, that supports the Endangered pink mucket pearly mussel (*Lampsilis orbiculata*). The new site is approximately 8 miles (13 km) above a site where Service biologists found the mussel in 1986. This discovery definitely establishes that the pink mucket pearly mussel exists in an approximately 9-mile (14 km) reach of the Ohio River in the upper Greenup navigation pool. The future development of hydropower, navigation and related activities associated with renovation of the Gallipolis Locks and Dam, and a large proposed paper mill may adversely impact the 9-mile reach where the mussel occurs.

The New York State Department of Environmental Conservation reports three new nesting pairs of bald eagles (*Haliaeetus leucocephalus*) this year in the southeastern part of the State. This brings the statewide number of nesting pairs to 12.

(continued on page 8)

## Regional News

(continued from page 7)

**Region 8** — The captive flock of Puerto Rican parrots (*Amazona vittata*) at the Luquillo Aviary in Puerto Rico produced 39 eggs this year, but only 2 are definitely fertile with viable embryos. At least two pairs of parrots in the wild nested, but one of the nests failed. A dead chick and two non-viable eggs were sent to the Service's National Wildlife Health Research Center at Madison, Wisconsin, for analysis.

**Region 9** — The Government of Mexico has announced that it is prohibiting the take of sea turtles in its waters and the destruction of turtle nests. Accompanying this decision, the government is: initiating a program to study the magnitude of incidental take of sea turtles during fishery activities; extending offshore and beach refuge zones; increasing scientific studies and other programs aimed at the protection and conservation of sea turtles; and registering all existing stockpiles of sea turtle products. The Fish and Wildlife Service has been working very closely with Mexico for many years on sea turtle conservation projects, and is very supportive of Mexico's efforts to protect its sea turtles and other endangered wildlife.

The President of Mexico also has announced Mexico's decision to join the 109 Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). It is through the cooperation of the CITES Parties that the international wildlife trade is both monitored and regulated (see BULLETIN Vol. XV, No. 5). At the request of the Mexican government, staff from the Fish and Wildlife Service's Offices of Management Authority, Scientific Authority, and Law Enforcement will be meeting with the Ministry of Urban Development and Ecology (SEDUE) in Mexico City this summer to provide technical assistance in the implementation of CITES.

## BOX SCORE LISTINGS AND RECOVERY PLANS

Category	ENDANGERED		THREATENED		LISTED SPECIES TOTAL	SPECIES WITH PLANS
	U.S.	Foreign Only	U.S.	Foreign Only		
Mammals	53	244	8	22	327	25
Birds	76	145	11	0	232	61
Reptiles	15	59	17	14	105	24
Amphibians	6	8	5	0	19	5
Fishes	51	11	33	0	95	47
Snails	3	1	6	0	10	7
Clams	37	2	1	0	40	28
Crustaceans	8	0	2	0	10	4
Insects	11	1	7	0	19	12
Arachnids	3	0	0	0	3	0
Plants	177	1	58	2	238	107
<b>TOTAL</b>	<b>440</b>	<b>472</b>	<b>148</b>	<b>38</b>	<b>1098*</b>	<b>320 **</b>

Total U.S. Endangered **440** (263 animals, 177 plants)

Total U.S. Threatened **148** (90 animals, 58 plants)

Total U.S. Listed **588** (353 animals, 235 plants)

\*Separate populations of a species that are listed both as Endangered and Threatened are tallied twice. Those species are the leopard, gray wolf, grizzly bear, bald eagle, piping plover, roseate tern, Nile crocodile, green sea turtle, and olive ridley sea turtle. For the purposes of the Endangered Species Act, the term "species" can mean a species, subspecies, or distinct vertebrate population. Several entries also represent entire genera or even families.

\*\*There are 265 approved recovery plans. Some recovery plans cover more than one species, and a few species have separate plans covering different parts of their ranges. Recovery plans are drawn up only for listed species that occur in the United States.

Number of Cooperative Agreements signed with States and Territories: 53 fish & wildlife  
39 plants

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# ENDANGERED SPECIES

## Technical Bulletin

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